



DEPARTMENT OF THE NAVY

NAVAL AIR STATION OCEANA
1750 TOMCAT BOULEVARD
VIRGINIA BEACH, VIRGINIA 23460-2191

IN REPLY REFER TO:

NASOCEANAINST 8020.1A
30

24 JUL 2001

NAS OCEANA INSTRUCTION 8020.1A

Subj: EMISSIONS CONTROL (EMCON) OF HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO)

Ref: (a) NAVSEA OP 3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010, Volume 2, Eighth Revision
(b) OPNAVINST 5100.23E
(c) NAVMEDCOMINST 6470.2A
(d) NAVFAC 11010/31, Part II
(e) NAVSEA OP 3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010

Encl: (1) General HERO Safe Separation Distance Requirements
(2) HERO Zones, Ordnance Transportation Routes, and Ordnance and Data Collection Locations Map
(3) Applications for Setting HERO Conditions
(4) HERO EMCON Procedures
(5) Safe Separation Distances for Aircraft HF, VHF, UHF, Radar Transmitters, Portable and Mobile Transmitters Requirements

1. Purpose. To issue policy and procedures for safe handling, transportation and stowage of ordnance with regard to HERO at Naval Air Station (NAS) Oceana. Per references (a) through (e), Hazards of Electromagnetic Radiation to Personnel (HERP) and Fuel (HERF) are also addressed in this instruction and amplified in enclosures (1) through (5).

2. Cancellation. NASOCEANAINST 8020.1.

3. Scope. This instruction is applicable anytime HERO Susceptible or HERO Unsafe Ordnance is handled, loaded or transported by NAS Oceana at all ordnance locations.

4. General Discussion. As described in reference (a), electromagnetic radiation hazards stem from functional characteristics of electrically initiated ordnance and are a result of absorption of electromagnetic energy by firing circuitry of electrically initiated devices (EID). The induced energy can cause heating of the bridge-wire and primary explosive, and can result in premature, unintended actuation of the EID. Such an event can pose either a safety or reliability problem. In general, ordnance is most susceptible to radio-frequency (RF) environments during assembly, disassembly,

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handling, loading and unloading. There are three classifications pertinent to HERO: HERO Safe Ordnance, HERO Susceptible Ordnance and HERO Unsafe Ordnance. Therefore, HERO EMCON and ordnance handling restrictions and procedures form a compromise which allows for safe handling of ordnance within the existing RF environment. EMCON is derived from an analysis of fields produced by existing RF transmitters and ordnance susceptibilities described in reference (a) or through a HERO survey. The following paragraphs describe the categories of ordnance:

a. Hero Safe Ordnance. Items that require no RF environmental restrictions beyond general HERO requirements described in paragraph 5-4 of reference (a).

b. Hero Susceptible Ordnance. Items that are susceptible and require moderate RF environmental restrictions.

c. Hero Unsafe Ordnance. Items that are extremely susceptible and require severe RF environmental restrictions.

d. HERP and HERF. Radar and communications equipment (transmitters) and RF heat sealers may emit hazardous levels of RF/microwave radiation. In addition to causing biological changes, RF/microwave radiation can induce electrical currents/voltages that may cause shocks and burns, premature activation of electro-explosive devices in ordnance, and arcs, which may ignite flammable materials. The HERP/HERF test report provides specific guidance for operating procedures. These procedures may include one or more of the following:

(1) Refrain from using the antenna,

(2) Reduce power for the frequencies at which the Personnel Exposure Limit (PEL) is exceeded and

(3) Refrain from using frequencies at which the PEL is exceeded.

For more information on reducing HERP and HERF, see reference (e).

5. HERO EMCON Bill. Provides specific guidance pertinent to emitter systems at NAS Oceana in order to mitigate concern for HERO. Standard HERO precautions are listed in enclosure (1). HERO zones for NAS Oceana are illustrated in enclosure (2). Enclosures (3) and (4) provide both applications and procedures for setting of HERO EMCON. Enclosure (5) provides HERO separation distances for aircraft, portable and mobile transmitters. The NAS Oceana Air Operations Duty Officer (AODO), upon notification, will set appropriate HERO EMCON Condition to ensure that electromagnetic environments do not exceed acceptable levels. In order to simplify the HERO EMCON bill, the station is divided into zones per enclosure (2).

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6. Responsibilities

a. Commanding officers/officers in charge (OICs) and department heads:

(1) Ensure all operators of communications equipment and aircrews comply with this instruction.

(2) Ensure personnel operating transmitters are properly instructed in their use during EMCON conditions.

(3) Notify Ground Electronics Maintenance Division and Atlantic Ordnance Command Detachment Oceana (AOCD) prior to using new radiating electronic equipment at NAS Oceana.

(4) Promulgate supplementary instructions pertaining to their own equipment, personnel and operating procedures, as required, to ensure compliance with this instruction.

b. OIC, AOCD Oceana. The OIC, AOCD Oceana is the central point of contact (POC) for determining appropriate reference as it relates to all forms of ordnance handled at NAS Oceana. As such, he will assist the Ground Electronics Maintenance Officer (GEMO) and act as HERO liaison to track and monitor all future emitter and ordnance facility (or handling location) changes. The liaison will coordinate the HERO program and account for all station and tenant command information, concerning ordnance inventory/operations and transmitter/antenna systems present. He will assist the HERO Officer in ensuring future transmitter and antenna changes at NAS Oceana are submitted for HERO review.

(1) Ensure all ordnance personnel are familiar with HERO restrictions applicable to ordnance operations.

(2) When issuing any ordnance (or ordnance component) to a user, advise user of its HERO status during all aspects of its life cycle (i.e., transportation, storage, assembly, handling and loading operations).

(3) Upon receipt of ordnance items that are categorized as HERO Susceptible or HERO Unsafe Ordnance, inform the HERO Officer so HERO issues can be mitigated ensuring both safety and reliability.

(4) Ensure HERO Unsafe and HERO Susceptible Ordnance is enclosed and transported in all-metal containers (when transported in sealed all-metal containers, ordnance is considered HERO safe). If HERO Susceptible Ordnance is transported outside an all-metal container, observe HERO separation distances listed in enclosure (5) for aircraft, portable and mobile transmitters. In the event of an ordnance accident, set appropriate HERO condition for HERO Unsafe Ordnance.

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(5) Place HERO warning signs prohibiting radio transmissions at the entrance to the magazine area and all ordnance handling or storage facilities.

c. NAS Oceana Air Operations Officer

(1) Will act as central POC for setting and monitoring of HERO EMCON and will maintain a list of names and phone numbers for those activities impacted by HERO EMCON. All future emitter changes at NAS Oceana should be provided to the HERO Officer for inclusion into the HERO EMCON bill.

(2) Restrict aircraft on flight lines from indiscriminately energizing any transmitters (communications, radars or electronic warfare equipment).

(3) Ensure taxiing/landing aircraft are informed when HERO conditions are set.

(4) Establish and maintain liaison with all tenant activities and resolve any conflicts in HERO requirements.

(5) Include HERO EMCON radio-operation training as a qualification requirement for vehicle operators on the airfield and on board the air station.

d. GEMO

(1) Ensure all mobile and portable radios under the cognizance of this command are affixed with HERO warning labels to identify safe separation distances prior to issue.

(2) Inform the OIC AOCD Oceana (i.e., the HERO liaison) when stationary communications transmitters or radars are relocated or new equipment is obtained. These changes should be submitted for HERO review per reference (d).

e. NAS Oceana HERO Officer

(1) The GEMO will assume the duties of NAS Oceana HERO Officer.

(2) Be responsible for a continuing program to ensure HERO safety at the air station.

(3) Convene an annual conference of ordnance and radiation hazard (RADHAZ) personnel, who are representative of each unit or organization, to discuss and recommend changes to these instructions.

(4) Monitor supply of HERO warning signs and order, as necessary.

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(5) Review RADHAZ requirements and request HERO surveys, when required.

(6) Approve/disapprove all new or modified transmitter installations and frequency coordination on station. Contact Naval Surface Warfare Center, Dahlgren Division (Code J52) for all questions concerning HERO.

(7) Approve/disapprove any request to operate amateur radio equipment on board NAS Oceana.

f. NAS Oceana Safety Manager. Act as review authority to ensure compliance with applicable safety directives.

g. Tenant Units

(1) Notify the GEMO when new communication or radar equipment is obtained or when any such equipment is relocated.

(2) Notify the AODO prior to commencing transporting and loading operations involving HERO Susceptible Ordnance.

h. Public Safety Storefront, Virginia Beach Precinct (NAS Oceana/Dam Neck Annex). Responsible for notifying station personnel and visitors who have mobile transmitters in their personal vehicles that transmission on board NAS Oceana will be permitted only with the written permission of the Commanding Officer.

i. Fire Department. In the event of an ordnance accident or incident, the senior fire official will act as on-scene commander until such time as the situation has been resolved (i.e., explosive ordnance disposal (EOD) responds and the item is rendered safe or the item is determined safe to transport).

7. Requirements. To ensure ordnance handling safety, precautions must be taken to limit the RF environment in and around ordnance handling areas. Enclosure (1) contains standard HERO precautions and chapter 5 of reference (b) provides HERO requirements during ordnance operations.

a. When ordnance is being assembled, handled or transported within the confines of the magazine area, emissions from various mobile and portable very high frequency (VHF)/ultra high frequency (UHF) transmitters should be silenced or the HERO Unsafe and HERO Susceptible Ordnance safe separation distances, as provided in chapter 2 of reference (a), should be maintained.

b. HERO Susceptible or HERO Unsafe Ordnance cannot be moved, transported or loaded at NAS Oceana, except as specified by the HERO liaison.

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c. Per reference (a), other conditions necessitating deviations from requirements outlined will be reported to Naval Ordnance Safety and Security Activity.

8. Procedures

a. The following general procedures apply when setting HERO EMCON at NAS Oceana:

(1) In the event of an ordnance accident involving aircraft carrying aviation ordnance (or an ordnance carrier along the ordnance transportation route), the appropriate HERO Unsafe Ordnance condition [defined in enclosures (3) and (4)] will be set by the AODO and remain in effect until EOD personnel have completed a Render Safe Procedure or determined that EMCON is no longer required (i.e., the ordnance is safe to transport).

(2) The AODO will notify all ordnance accident response units to maintain a minimum separation distance of 150 feet from the accident site when five VHF/UHF mobile radios are in use and 50 feet when five portable radios are in use:

(3) For HERO Susceptible Ordnance, the AODO will be notified 24 hours prior to routine implementation of HERO requirements by the using activity's ordnance personnel. Commencement time and automatic expiration time will require a minimum of 30 minutes notice by the using activity.

(4) In all instances, the AODO will contact activities impacted by HERO (e.g., stationary transmitters to be silenced) and inform all aircraft on the ground (or inbound aircraft) to discontinue use of communication transmitters operating in the 1.5 to 32 MHz frequency range and high-power radars.

b. The following procedures apply when handling ordnance at NAS Oceana:

(1) Transport and store HERO Unsafe Ordnance in sealed, all-metal containers.

(2) When transporting HERO Susceptible Ordnance, comply with ordnance handling requirements listed in chapter 5 of reference (a).

(3) Ensure radios installed in ordnance handling vehicles maintain the minimum 10-foot antenna-to-ordnance separation distance required for HERO Safe Ordnance. [See chapter 5, paragraph 5-4.4 of reference (a)].

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(4) Emissions from various mobile and portable VHF/UHF transmitters should be silenced or the HERO Unsafe and HERO Susceptible Ordnance safe separation distances, as provided in enclosure (1) and chapter 2 of reference (a), should be maintained.

(5) When issuing any ordnance or component to a user, the AOCD Oceana representative will advise the user if material becomes HERO Unsafe or HERO Susceptible during assembly or loading operations.

c. The following procedures apply when handling ordnance in the magazine area:

(1) Restrict use of mobile and portable radios within the magazine area when HERO Unsafe and HERO Susceptible Ordnance are present.

(2) Ensure mobile radios installed in ordnance handling vehicles maintain the minimum 10-foot antenna-to-ordnance separation distance required for HERO Safe Ordnance. [See chapter 5, paragraph 5-4.4 of reference (a)].

(3) No HERO Unsafe Ordnance will leave the confines of the magazine area, except in a completely enclosed, all-metal container. The only exception would be in case of an extreme emergency.



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Distribution:

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Lists I (11, 30 and 40) (Case A) and III (AOCD, N041VB, 22, N05VB, N03VB, 26JJ1, 4E1, 42GG1, 42J1, 42L1, 42L2, 42UU1, 42XX, C58J, FA32 and SE41)



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GENERAL HERO SAFE SEPARATION DISTANCE REQUIREMENTS

1. The following requirements apply to all ordnance operations at NAS Oceana involving the presence, handling and loading of ordnance, unless otherwise specified in NAVSEA OP-3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010.

a. Use reference (a) for specific HERO guidance concerning HERO Unsafe and HERO Susceptible Ordnance. Reference (a) provides recommendations for mitigating HERO. Enclosed is a listing of emitter systems (and safe separation distances), facility drawings (indicating emitter system and ordnance locations, as well as HERO zones to facilitate setting of HERO EMCON), current HERO status of ordnance stored in the magazine area, results of the 1999 HERO survey and a complete HERO EMCON bill for NAS Oceana.

b. Ordnance evolutions must be planned so there is a minimum of ordnance exposure to the RF environment.

c. Avoid touching any exposed firing contact, wiring or other exposed circuitry with any part of the body or with any metallic object.

d. Ensure all open electrical connectors on the ordnance are covered with nonshorting caps.

e. Ordnance will not be assembled/disassembled in a RF environment.

f. Igniters, primers, detonators and other items containing EID will not be stowed in the same magazine as electronic or electric fuses.

g. Conduct all handling and loading operations so the nearest part of ordnance or any metallic structure or object attached to the ordnance (e.g., handling equipment, tow vehicles, etc.) is at least seven meters (25 feet) from the nearest extremity of any communication antenna including cellular telephones or radio transmission equipment radiating more than five watts of power. This applies to HERO Safe, Unsafe and Susceptible Ordnance. For exposed HERO Unsafe or HERO Susceptible Ordnance, use the safe separation distances provided in this instruction or chapter 2 of reference (b).

h. If the preceding safe separation distance requirements must be violated for any ordnance operation, the transmitting antenna must be silenced.

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2. Transporting ordnance at NAS Oceana requires the same safety requirements and RF environment restrictions specified for that particular item during normal handling operations. When ordnance systems are disassembled or when they have exposed EIDs, firing circuits or wiring during the transport operation, the "HERO Unsafe Ordnance" restrictions of NAVSEA OP 3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010 applies.

3. Ensure ordnance accident response units (fire, ordnance and security) maintain a minimum separation distance of 150 feet from the accident site when five or more VHF/UHF mobile radios are in use and 50 feet when five or more portable radios are in use. For single radio use, see the applicable separation distances listed in enclosure (5).

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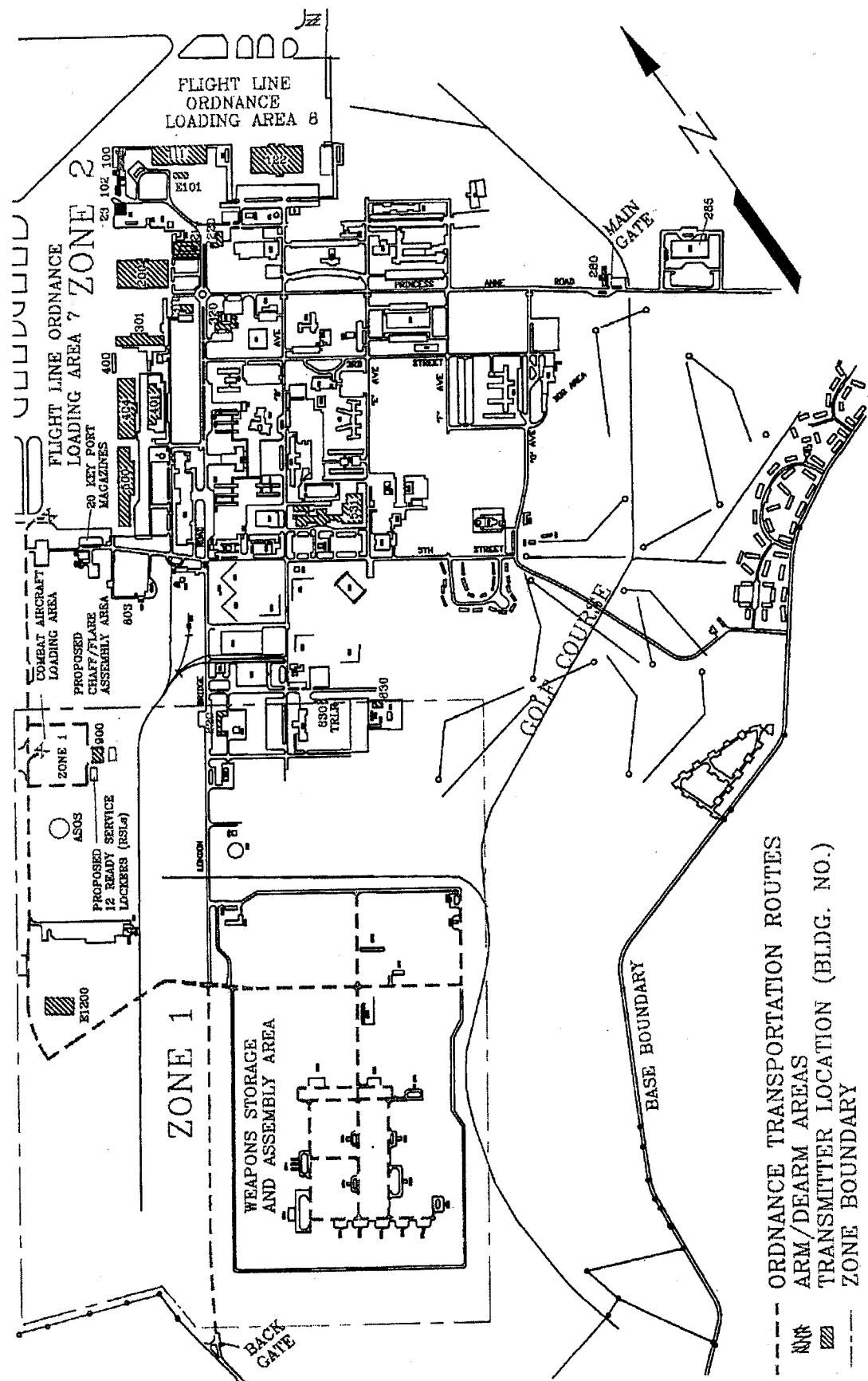


FIGURE 1. NAVAL AIR STATION OCEANA, VIRGINIA BEACH, VIRGINIA:
INDUSTRIAL/ADMINISTRATION AREA

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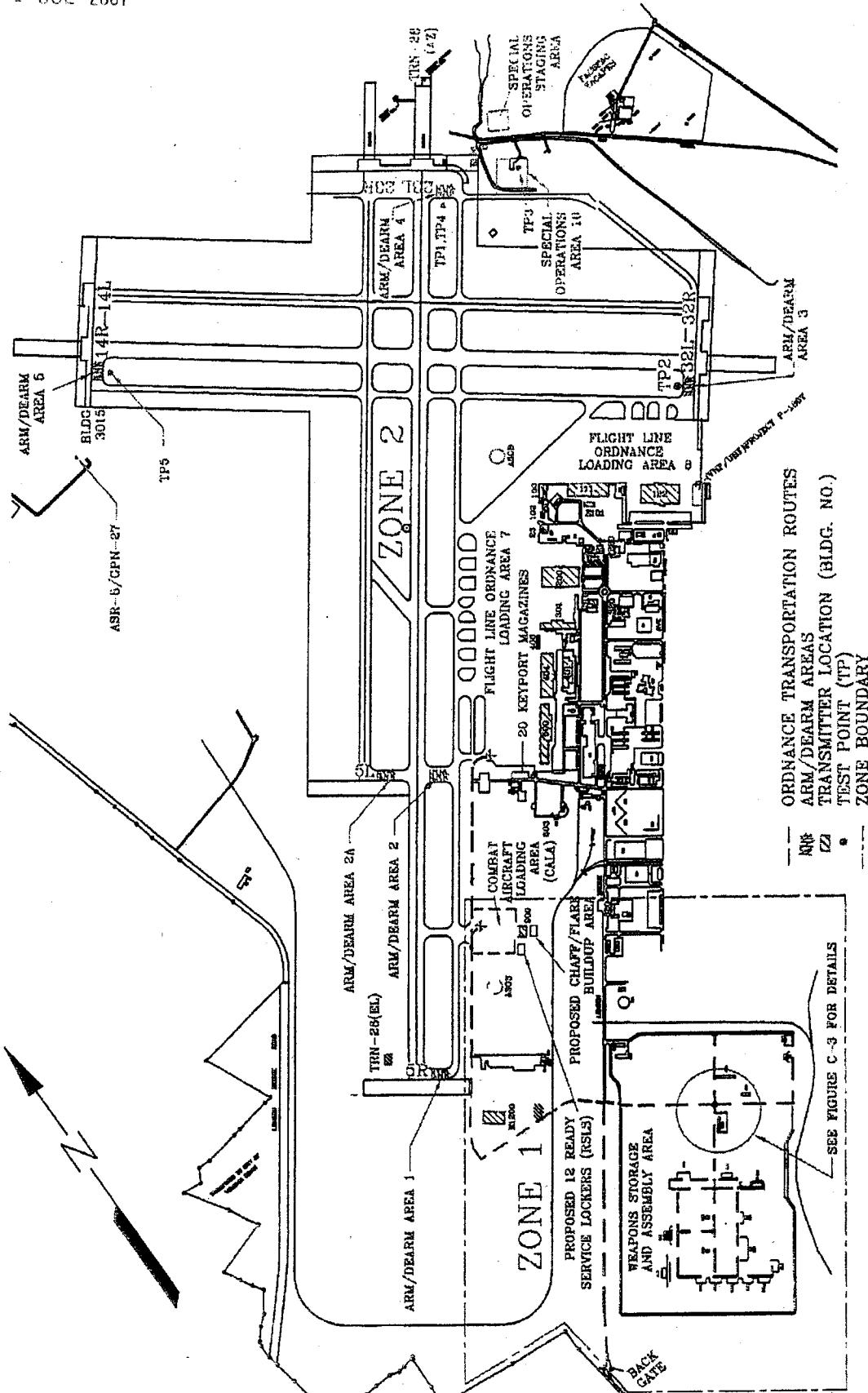


FIGURE 2. NAVAL AIR STATION OCEANA, VIRGINIA BEACH, VIRGINIA:
AIRFIELD AND HANGARS

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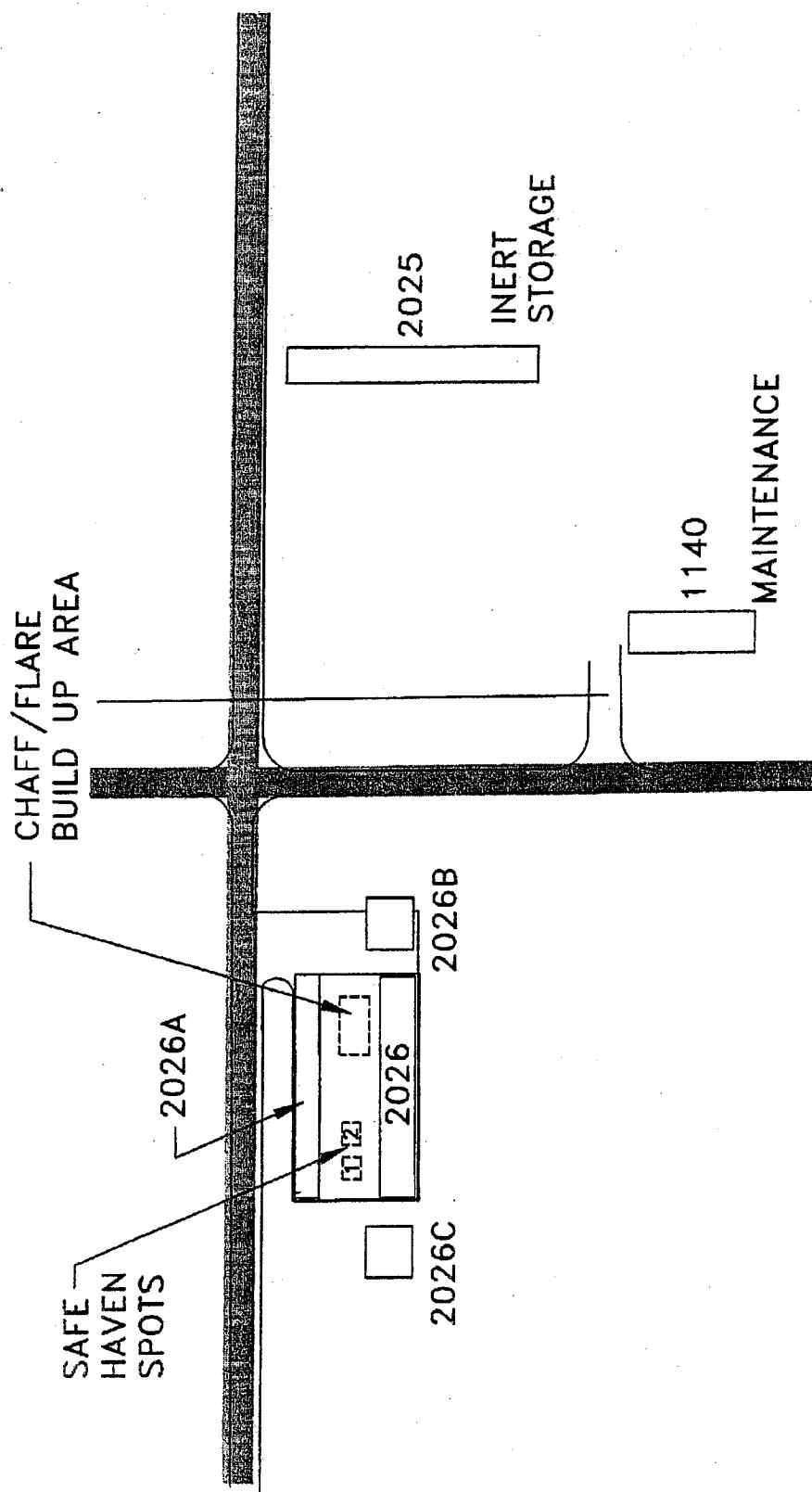


FIGURE 3. NAVAL AIR STATION OCEANA, VIRGINIA BEACH, VIRGINIA:
DETAIL OF WEAPONS STORAGE AREA



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APPLICATIONS FOR SETTING HERO CONDITIONS

<u>Ordnance</u>	<u>Situation/ Activity</u>	<u>Location</u>	<u>HERO Condition</u>
<u>General Applications</u>			
All HERO Safe Ordnance	Presence, handling and loading	All	0
All HERO Unsafe Ordnance	Presence, handling and loading	Zone 1 Zone 2	1 1
All HERO Susceptible Ordnance	Presence, handling and loading	Zone 1 Zone 2	2 2



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HERO EMCON PROCEDURES

HERO CONDITION 0

HERO EMCON is not required. All transmitters as listed in enclosure (5) may be operated. Observe general HERO requirements outlined in chapter 5 of reference (d).

HERO CONDITION 1

This condition applies to HERO Unsafe Ordnance in zones 1 and 2.

Apply the following procedures:

<u>Equipment</u>	<u>Power</u>
All aircraft transmitters (except communication transmitters operating in 32 to 400 MHz frequency range at less than 20 watts or transmitters operating into dummy loads)	Silence

Observe HERO Unsafe Ordnance separation distances listed in enclosure (1) or chapter 2 of reference (d) for mobile and portable transmitters.

For an ordnance accident, emergency response units, such as fire, ordnance and security responding to the scene with radio equipment, must maintain a minimum separation distance of 150 feet from the accident site if using five mobile radios (132 to 174 MHz frequency range); similarly, a minimum separation distance of 50 feet must be maintained when using five portable radios. Silence all other radios at the scene; for single radio use, apply separation distances cited in enclosure (5) or chapter 2 of reference (d) for that specific mobile or portable unit.

HERO CONDITION 2

This condition applies to HERO Susceptible Ordnance in zones 1 and 2.

Apply the following procedures:

<u>Equipment</u>	<u>Power</u>
All aircraft communication transmitters operating in 1.5 to 32 MHz frequency range	Silence
All aircraft radar transmitters	Silence

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Observe HERO Susceptible Ordnance separation distances listed in enclosure (5) or chapter 2 of reference (d) for mobile and portable transmitters.

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**SAFE SEPARATION DISTANCES FOR AIRCRAFT HF, UHF, VHF, RADAR TRANSMITTERS, PORTABLE AND MOBILE
TRANSMITTERS REQUIREMENTS**

Bldg/ Location	Antenna Name- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter	Separation Distance HERO Unsafe Susceptible ORDNANCE (Feet/meters)
						Type	
23/SAR	DB-201F	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17 12/4
100/ AODO	DB-201F	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17 12/4
ASP Model K-51	Whip	2.0		136-174	25	Motorola D33MJ MAXTRAC	56/17 12/4
Mobile K-51 (2 ea)	ASP Model K-51 (2 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17 12/4
Portable	H-128	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7 10/3
Air Ops Mobile H-00	UVU-100 (2 ea)	Dipole	2.1	116-150 225-400	5	PET 2000	29/9 15/5 10/3 10/3
Air Ops Mobile H-0	AS-390/ SRC Mobile	Coaxial stub	2.1	225-400	25	AN/GRC-171(V)	34/10 10/3
ECS	TACO D-2295	Dipole	2.1	121.5	10	AN/GRT-21	40/12 10/3

Enclosure (5)

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance		
							HERO Susceptible ORDNANCE	Unsafe ORDNANCE	HERO ORDNANCE (feet/meters)
TACO D-2295	Dipole	2.1	120.875	10	AN/GRT-21	40/12	10/3	13/4	
TACO D-2295	Dipole	2.1	116-152	25	AN/GRC-211	66/20			
TACO D-2295	Dipole	2.1	243	10	AN/GRT-22	20/6	10/3		
TACO D-2295	Dipole	2.1	266.8	10	AN/GRT-22	18/6	10/3		
TACO D-2295	Dipole	2.1	360.2	10	AN/GRT-22	13/4	10/3		
TACO D-2295	Dipole	2.1	225-400	25	AN/GRC-171(V)	34/10	10/3		
AS-390/SRC	Coaxial stub	2.1	225-400	20	AN/URC-101	30/9	10/3		
ACLS SPN-42	Parabolic	49.0	33.0-33.4 GHz	20	AN/SPN-42	117/36	49/15		
Tower K-51	ASP Model	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
H-128 (3 ea)	Whip	0.9	136-174	5	Portable HT- 1000	22/7	10/3		

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Max. Avg. Power (Watts)	Separation Distance		
						Transmitter Type	Transmitter ORDNANCE (feet/meters)	HERO Unsafe Susceptible ORDNANCE (feet/meters)
E101, E136, E1200	SCALA	Omni	2.1	74.700- 76.280	1	EST Model 95	20/6	10/3
102/ T-Line	NAD-6282 (8 ea) ASP Model K-51 DB-201F ASP Model K-51 Mobile	Whip Whip Dipole Whip ASP Model K-51 ASP Model K-51 H-128 (8 ea) DB-201F ASP Model K-51 (5 ea)	0.9 2.0 2.1 2.0	136-174 136-174 136-174 136-174 136-174 136-174 136-174 0.9	5 25 25 25 136-174 25 25 25	Motorola D33MJ MAXTRAC Motorola D33MJ MAXTRAC Motorola D33MJ MAXTRAC Motorola H01KDC HT-1000 Motorola C63CX Motorola D33MJMAXTRAC	22/7 56/17 56/17 56/17 56/17 56/17 22/7 56/17	10/3 12/4 12/4 12/4 12/4 12/4 10/3 12/4
110/ GSE Pool	ASP Model K-51	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
111	ASP Model K-51 (5 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
121	Ground plane	Whip	2.1	136-174	90	Motorola C63CX	107/32	23/7
122	Ground plane	Whip (5 ea)	2.0	136-174	25	Motorola D33MJMAXTRAC	56/17	11/4

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Bldg/ Location	Antenna Name- ature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance		
							HERO Unsafe Susceptible ORDNANCE	HERO ORDNANCE	(feet/meters)
Portable	H-128 (14 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
200	DB-201F (6 ea)	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
	ASP Model K-51 (3 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
Portable	H-128 (17 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
Portable	NAD-6282	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3	
210 CTWL TM Tower	AT-197/GR (2 ea)	Vert grnd Plane omni	2.1	225-400	20	MOT CM520	30/9	10/3	
	AT-197/GR	Vert grnd Plane omni	2.1	225-400	20	MOT CM520	30/9	10/3	
220/Fire Dept.	DB-201F (2 ea)	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Separation Distance		
						Type	PROTO HERO Unsafe Susceptible ORDNANCE (feet/meters)	PROTO HERO Unsafe Susceptible ORDNANCE (feet/meters)
	ASP Model K-51 Mobile (15 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
	Portable NAD-6282 (22 ea)	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3
5	Portable H-128	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3
	ASP Model K-51 CMAA	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
	Portable NAD-6282 (2 ea)	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3
	ASP Model K-51 Mobile	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
	230/ Qtrdeck (2 ea)	Dipole	2.1	136-174	25	Motorola D33MJ AXTRAC	56/17	12/4
	Portable ASP Model K-51 Mobile (2 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance		
							HERO Susceptible ORDNANCE (feet/meters)	HERO Unsafe ORDNANCE (feet/meters)	HERO ORDNANCE (feet/meters)
Portable	NAD-6282 (4 ea)	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3	
240/ NAMTRA Portable	NAD6282 (2 ea)	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3	
285/ Medical	H-128 (2 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
6									
310/ TACTS	Cellwave Pd-220	Colinear	5.0	139-143	150	LATR-TGIS	188/57	40/12	
	Diamond 433-1	Colinear	11.0	432.1-434.1	75	LATR-TGIS	85/26	29/9	
	N/A	4' Parabolic	30.7	7.140 GHz	0.36	MDL	10/3	10/3	
320/ Security Portable	AS-3980A	Whip	0.9	136-174	5	Motorola MX300R Saber	22/7	10/3	
Mobile	ASP Model K-51 (14 ea)	Whip	2.0	136-174	25	Motorola SPECTRA	56/17	12/4	

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance		
							HERO Unsafe Susceptible ORDNANCE	HERO Susceptible ORDNANCE	(feet/meters)
Mobile	ASP Model K-51 (8 ea)	Whip	2.0	136-174	25	Motorola	56/17	12/4	
404	DB-201F (2 ea)	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
	ASP Model K-51 (3 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
7	Portable H-128 (22 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
500	DB-201F (3 ea)	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
	Portable H-128 (13 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
501 / Portable	H-128	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
603 / Fuels	ASP Model K-51 (2 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance		
							HERO Susceptible ORDNANCE	HERO ORDNANCE	(feet/meters)
Portable	H-128 (9 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
Portable	NAD-6282 (6 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
820/PWC	ASP Model K-51	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
Mobile	ASP Model K-51 (9 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
Portable	NAD-6282 (3 ea)	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3	
Portable	H-128 (2 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3	
820/PWC Portable	NAD6282	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3	
Mobile	ASP Model K-51 (5 ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4	
826/ SCHRIMP	NAD-6282 Portable	Whip	0.9	136-174	5	Motorola H43GCU MT-1000	22/7	10/3	

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance	
							HERO ORDNANCE	Unsafe Susceptible ORDNANCE (feet/meters)
840/ CBU-415	DB-201F	Dipole	2.1	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
Portable	H-128 (4 ea)	Whip	0.9	136-174	5	Motorola H01KDC HT-1000	22/7	10/3
3000	UVU-100 (4 ea)	Vertical polarized	2.1	116-150 225-400	10	PRC-113 (RT-1319)	42/13 21/7	10/3 10/3
3002	AS-3184/ URN	Dipole array	6	962	120	AN/URN-25	42/13	21/6
3015	FA-10016 (2 ea)	Planar array	21	1030	1.8	AN/UPX-27	27/8	14/4
0	FA-9344	Rectangle Normal	33.5	2700-2900	875	AN/GPN-27	960/292	674/207
FACSFAC VACAPES	ASP Model K-51 (5ea)	Whip	2.0	136-174	25	Motorola D33MJ MAXTRAC	56/17	12/4
3030	Andrews- 3002A	Spira- cone	12.0	2-32	1000	AN/URT-42 (V)	11330/3449	1133/345
	Granger- 3065	HTOA bowtie fan	12.0	4-30	1000	AN/URT-42 (V)	11330/3449	1133/345
TCI-613	HTOA dipole		7.0	2-6	1000	AN/URT-42 (V)	6372/1940	637/194

Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance	
							HERO ORDNANCE	Unsafe Susceptible ORDNANCE (feet/meters)
TACO D-2212	Colinear array	1.0	116-150	10	AN/GRT-21	37/11	10/3	
TACO D-2218	Colinear array	1.0	116-150	10	AN/GRT-21	37/11	10/3	
			116-152	25	AN/GRC-211	58/18	12/4	
			225-400	10	AN/GRT-22	19/6	10/3	
TACO D-2221	Colinear array	1.0	225-400	10	AN/GRT-21	19/6	10/3	
AS-1018/ URC	Colinear array	5.0	225-400	10	AN/GRT-22	30/9	10/3	
AS-1097 (A) GR	Coaxial dipole	7.0	225-400	50	AN/GRT-22	84/26	22/7	
AS-1018/ URC	Colinear array	5.0	225-400	100	AN/URC-93-(V) 2	95/29	25/8	
CA-3438H	Helical	11.0	225-400	100	AN/WSC-3 (V) 6	95/29	25/8	
Andrews	Parabolic	40.0	7125-8500	1	AN/WSC-3 (V) 3	189/58	50/15	
					Collins MW-518	26/8	18/6	

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance		
							HERO ORDNANCE	Unsafe Susceptible ORDNANCE	(feet/meters)
N/A	IFF array	27.0	1030	0.24	ATC B1-5	10/3	10/3	10/3	10/3
437B-1	Collins	2.1	225-400	20	AN/GRC-171	30/9	10/3	10/3	10/3
TACO D-2274	Dipole	2.1	225-400	10	AN/GRT-22 W/linear amp	21/7 48/15	10/3	10/3	10/3
ASP-7A	Dipole	2.1	403-512	30	MOT T34JJ	21/6	10/3	10/3	10/3
3045 FAA	ASRS-4	3-D array	37.7	1215-1400	3054	AN/ARSR-4	646/197	646/197	646/197
PAR Trailer	AS-3160/ UPN AS-3161/ UPN	Parabolic (AZ and EL)	40.3	9000-9160	44 52.8	AN/FPN-63 AN/FPN-63 NORM MTI	141/43 155/47	100/30 109/33	100/30 109/33
Mobiles and Portable Transmitters									
UVU-100 (2 ea)	Vertical polarized	2.1	116-150 225-400	5	PET 2000	29/9 15/5	10/3 10/3	10/3 10/3	10/3 10/3
AS-390/ SRC	Coaxial stub	2.1	225-400	25	AN/GRC-171 (V)	34/10	10/3	10/3	10/3
SPECTRA K-51	ASP model	Whip	2.0	136-174	50	Motorola (general)	79/24	17/7	17/7

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Bldg/ Location	Antenna Name-	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance HERO Unsafe Susceptible ORDNANCE (feet/meters)	Separation Distance HERO Unsafe Susceptible ORDNANCE (feet/meters)
Mobiles and Portable Transmitters (Continued)								
MAXTRAC	ASP model K-51	Whip	2.0	136-174	25	Motorola D33MJ	56/17	12/4
HT-1000	Various	Whip	0.9	136-174	5	Motorola H01KDC	22/7	10/3
MT-1000	NAD6282	Whip	0.9	136-174	5	Motorola H43GCU	22/7	10/3
Saber MX-300R	Various	Stub	0.9	136-174	6	Motorola H43YX Motorola H43SX	24/7	10/3
AT-786/ PRC		Whip	2.1	30-32 >32-76	4	AN/PRC-77	229/70 93/28	12/4 10/3
N/A		Whip	0.9	243, 121.5	1	AN/PRC-96	10/3	10/3
N/A		Stub	0.9	116-150 225-400	10	AN/PRC-113	36/11 19/6	10/3
N/A		Whip	2.1	26.96 - 27.40	6	CB radio	281/86	16/5
N/A		Whip	5.1	824-894	4	Cellular telephone	10/3	10/3
N/A		Stub	0.9	121.5 406	0.025 5	SATFIND 406S- 1015 (EPIRB)	10/3 10/3	1 0/3 10/3

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Max. Avg. Power (Watts)	Transmitter Type	Separation Distance HERO Unsafe Susceptible ORDNANCE (feet/meters)
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Mobiles and Portable Transmitters (Continued)

AV-2011	SATCOM dish	11.0	225-400	18 (Hi) 5 (Lo)	AN/LST-5B/C 42/13	80/24 42/13 10/3

F-14 TOMCAT (series)

Communi- cations	N/A	Blade	2.1	30-88 118-156 156-174 225-400	15 10 15 15	AN/ARC-182 (V) 41/12 38/11 26/8
	N/A	Blade	2.6	225-400	40 10	AN/ARC-159 (V) 46/14 23/7
Survival Radio	N/A	2-wave omni	2.1	243, 282.8	.17	AN/PRC-90 10/3
ELT	N/A	Dipole	2.1	243	0.2	AN/URT-33 10/3
Inter- rogator	N/A	Parabolic	23.0	1030	1.8	AN/APX-76B 34/10
Trans- ponder	N/A	Blade	2.1	1090	1.69	AN/APX-72 10/3

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance HERO Unsafe Susceptible ORDNANCE (feet/meters)
F-14 TOWGAR (series) (Continued)							
TACAN	AT-741B/A	Blade	2.6	1025-1150	1.62	AN/APN-84 (V)	10/3
JTIDS	N/A	Blade	2.5	969-1206	3.8 396 66	AN/APN-118 (V) AN/URC-107 (V) HP AN/URC-107 (V) LP	10/3 51/15 21/6 10/3
Altitude- meter	AS2741/ APN	Horn	10.5	4290-4310	0.025	AN/APN-194 (V)	10/3
Beacon	N/A	Array	6.0	8800-9500	0.72	AN/APN-154 (V)	10/3
ECM	Various	Classi- fied	Classi- fied	Classified	Classified	AN/ALQ-126A	39/18

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Bldg/ Location	Antenna Name-	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter Type	Separation Distance HERO ORDNANCE
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E-14 TOMCAT (series) (Continued)	Separation Distance Unsafe Susceptible ORDNANCE (feet/meters)
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RADAR	AS-2264A/ AG-9	Planar array	Classi- fied	X-Band	Classified	AN/AWG-9, APG-71 CWI PD/Search on	296/90 436/133 661/202 541/165 886/270
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E/A-18 HORNET (series)

Communi- cations	N/A	Dipole	2.1	30-88 118-156 156-174 225-400	15 10 15 15	AN/ARC-182 (V)	444/135 50/15 38/12 21/7
Trans- ponder	AT-741B/A	Blade	2.6	1090	3.38	AN/APX-100 (V) 1	10/3
Inter- rogator	AS4267/ APX or AS4440/ APX	Horn	9.3	1030 1090	12 5	AN/APX-111	18/6 10/3
TACAN	AT-741B/A	Blade	2.6	1025-1150	3.5	AN/ARN-118 (V)	10/3

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Bldg/ Location	Name/ cature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Power (Watts)	Transmitter Max. Avg. (Watts)	Transmitter Type	Susceptible ORDNANCE (feet/meters)	Separation Distance HERO Unsafe ORDNANCE (feet/meters)
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E/A-18 HORNET (series) (Continued)

Altitude meter	N/A	Horn	10.5	4290-4310	0.6		AN/APN-194 (V)	10/3	10/3
Beacon	AS2619/ APN	Slotted waveguide	6	8800-9500	500		AN/APN-202	10/3	10/3
Radar Flood	AS-3254 / APG	Planar array Slotted array	34 16	I-band	Classified	AN/APG-65	285/87 36/11	203/62 26/8	

H-3

Communications	AT-741A or AT-256A	Blade	2.6	30-88 118-156 156-174 225-400	15 10 15 15		AN/ARC-182 (V)	444/135 50/15 38/12 21/7	23/7 10/3 10/3 10/3
AS-3060G	Dipole array	Blade	6.0 6.0	30-88 116-152	15 10		AN/ARC-186 (V)	695/212 65/20	36/11 13/4
AT-741A or AT- 256A	Blade	2.6		225-400	40 10		AN/ARC-159 (V)	46/14 23/7	12/4 10/3
AT-741 or AT-256A	Blade	2.6		225-400	20		AN/ARC-51A	32/10	10/3

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Bldg/ Location	Antenna Nomen- clature	Antenna Type	Antenna Gain (dBi)	Transmitter Freq (MHz)	Transmitter Max. Avg. Power (Watts)	Transmitter			Separation Distance HERO Unsafe Susceptible ORDNANCE (feet/meters)	(feet/meters)
						Type	Transmitter Type	Transmitter Type		
H-3 (Continued)										
TACAN	AT-741B/A	Blade	2.6	1025-1150	4.32		AN/ARN-118 (V)	10/3		10/3
IFF	AT-741B/A	Blade	2.6	1090	1.69		AN/APX-72	10/3		10/3
Altimeter	N/A	Horn	13.0	4290-4310	3		AN/APN-117 (V)	10/3		10/3